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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/774,577

02/09/2004

Jennifer A. Coggan

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06/08/2009

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EXAMINER

GARRETT, DAWN L

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

06/08/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/774,577	Applicant(s) COGGAN ET AL.	
	Examiner Dawn Garrett	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 10-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/13/09</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

1. This Office action is responsive to the amendment received February 27, 2009. Claim 14 was amended.

2. The species under consideration in the last Office action is the following:

Formula (I) wherein R2 and R3 are both heteroaromatic rings (limited to those types as recited in the current claims) and R1 and R4 are hydrogen. In Formula (II) this same species is where R5 and R6 are both heteroaromatic rings and R1-R4 are hydrogen.

This species wherein both R2 and R3 are heteroaromatic rings (limited to those specifically listed in the claims) and R1 and R4 are hydrogen and wherein both R5 and R6 are heteroaromatic rings (limited to those specifically listed in the claims) and R1-R4 are hydrogen in Formula II is now allowable.

Accordingly, the examiner has selected the next species for consideration:

Formula I wherein only one of R2 or R3 is a heteroaromatic ring and the remaining groups on the binaphthyl core are hydrogen. This same species corresponds to Formula II wherein only one of R5 or R6 is a heteroaromatic ring and the remaining groups on the binaphthyl core are hydrogen. Claims 10-13 are withdrawn as non-elected at this time, since they do not read upon the current species under consideration. Claims 1-9 and 14-16 are currently under consideration.

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3. The rejection of claims 14 and 15 under 35 U.S.C. 102(a) as being anticipated by Matsuura et al. (JP 2003-045662) set forth in the last Office action is withdrawn due to the amendment.
4. The rejection of claim 16 under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. (JP 2003-045662) in view of Suzurisato et al. (JP 2002-324676) is withdrawn.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

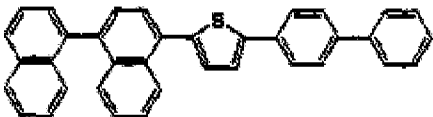
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

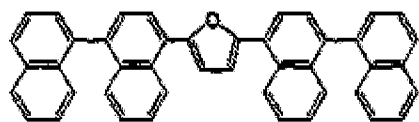
6. Claims 1, 2, 5-9, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kita et al. (EP 1013740 A2).

Kita et al. discloses an electroluminescent material comprising a binaphthyl derivative (see page 6, lines 9-30 and 55-57). Specifically the binaphthyl compounds may include the following (see pages 25-26):

B-t2



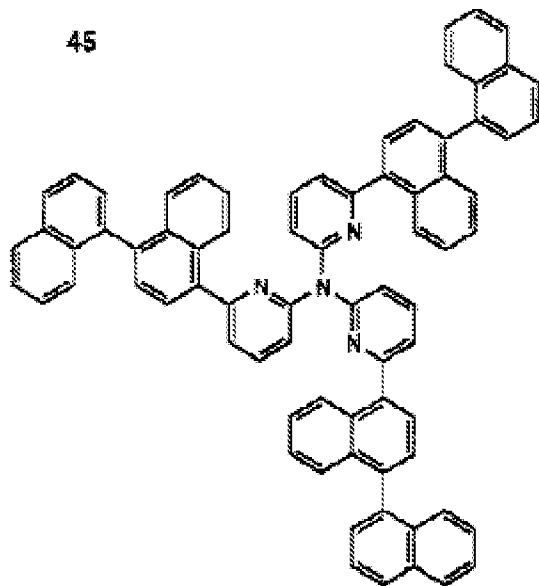
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B-24

The electroluminescent material is preferably in the emission layer (see par. 43, page 39).

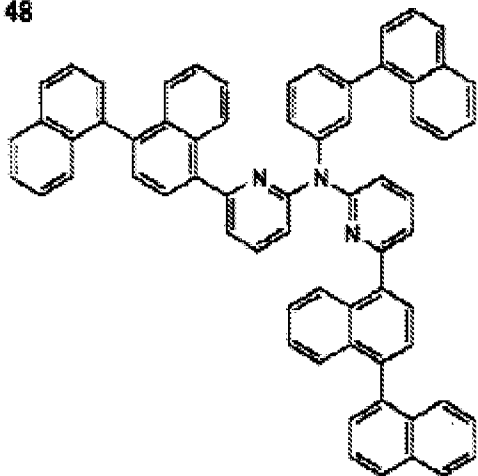
Doping material is included in the light emission layer (see par. 41, page 38). Layers of the device are described at par. 44-46, page 39.

7. Claims 1, 2, 5-9, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al. (JP 2002-175883). Yamada et al. disclose electroluminescent devices comprising a compound according to formula (1) (see abstract). Specific compounds according to formulas (1)-(11) for the device include the following (see par. 57) as well as compounds 46 and 49 on pages 16-17:



(compd. 45, page 16)

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48

(compound 48, page 17)

Layers of the device are described in par. 74-76. A dopant may be included in the luminous layer (see par. 83).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (EP 1013740 A2) in view of Suzurisato et al. (JP 2002-324676). Kita et al. is relied upon as set forth above.

Kita et al. is silent with respect to the specific features (i.e., specific materials and /or thickness) of a device per claim 16, but does generally teach functional multi-layers for forming the device. Suzurisato et al. teaches a binaphthyl compound (see par. 98 and 100) for the luminescent material of a luminous layer (see par. 107) and any well known dopant is taught to be used with the luminous material in the luminous layer (see par. 109). Suzurisato et al.

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discloses the EL device has an anode, hole injection layer, hole transportation layer, luminous layer, electron transportation layer, electron injection layer and cathode layer (see par. 159).

With regard to claim 16, an indium tin oxide anode can be formed at a thickness of 200nm (see par. 169), the hole injection layer may be formed of copper phthalocyanine (see par. 54) and the buffer layers (the hole injection layer as named by Suzurisato et al.) may be in a thickness of 0.1 to 100 nm (see par. 56), the hole transportation layer is formed of a tertiary amine (see par. 65) and is formed in a thickness of 5nm-5 micrometers (see par. 84), the thickness of the luminous layer is 5nm to 5 micrometers (see par. 119), the cathode may comprise a magnesium and silver alloy of 200 nm thickness (see par. 170). It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed the Kita et al. device having functional layers as taught by Suzurisato et al. and to have expected the predictable result of light emission from the device, because one would expect the layers taught by Suzurisato et al. to provide the needed functions for an EL device to efficiently emit light.

10. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (EP 1013740 A2) in view of Hoag et al. (US 6,824,893). Although Kita et al. teaches dopant is taught to be used with the luminous material in the luminous layer, the reference fails to specify a particular dopant compound or dopant amount that is added to the luminous layer per claims 3 and 4. Hoag et al. teaches, in analogous art, an important relationship for choosing a dye as a dopant is that the dopant have a smaller bandgap than that of the host material with regard to claim 3 (see col. 13, lines 28-34). Dopants are typically used in an amount of up to 10 wt% of the host (see col. 2, lines 49-53). It would have been obvious for one of ordinary skill in the art at the time of the invention to have selected a dopant having a smaller bandgap than the host for

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the luminescent layer of Kita et al. and to have added the dopant in an amount up to 10 wt% of the luminous layer, because Hoag teaches in analogous art that dopants with such a bandgap property and used in such an amount are commonly known and used in the art and one would expect dopants selected and used in the same way for the Kita et al. devices to be similarly useful.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (JP 2002-175883) in view of Suzurisato et al. (JP 2002-324676). Yamada et al. is relied upon as set forth above.

Yamada et al. is silent with respect to the specific layer features of a device (i.e. specific compounds and thickness) per claim 16, but does generally teach functional multi-layers for forming the device. Suzurisato et al. teaches in analogous art a binaphthyl compound (see par. 98 and 100) for the luminescent material of a luminous layer (see par. 107) and any well known dopant is taught to be used with the luminous material in the luminous layer (see par. 109). Suzurisato et al. discloses the EL device has an anode, hole injection layer, hole transportation layer, luminous layer, electron transportation layer, electron injection layer and cathode layer (see par. 159). With regard to claim 16, an indium tin oxide anode can be formed at a thickness of 200nm (see par. 169), the hole injection layer may be formed of copper phthalocyanine (see par. 54) and the buffer layers (the hole injection layer as named by Suzurisato et al.) may be in a thickness of 0.1 to 100 nm (see par. 56), the hole transportation layer is formed of a tertiary amine (see par. 65) and is formed in a thickness of 5nm-5 micrometers (see par. 84), the thickness of the luminous layer is 5nm to 5 micrometers (see par. 119), the cathode may comprise a magnesium and silver alloy of 200 nm thickness (see par. 170). It would have been

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obvious to one of ordinary skill in the art at the time of the invention to have formed the Yamada et al. device having functional layers as taught by Suzurisato et al. and to have expected the predictable result of light emission from the device, because one would expect the layers taught by Suzurisato et al. to provide the needed functions for an EL device to efficiently emit light from the device.

12. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (JP 2002-175883) in view of Hoag et al. (US 6,824,893). Although Yamada et al. teaches dopant is taught to be used with the luminous material in the luminous layer, the reference fails to specify a particular dopant compound or dopant amount that is added to the luminous layer per claims 3 and 4. Hoag et al. teaches, in analogous art, an important relationship for choosing a dye as a dopant is that the dopant have a smaller bandgap than that of the host material with regard to claim 3 (see col. 13, lines 28-34). Dopants are typically used in an amount of up to 10 wt% of the host (see col. 2, lines 49-53). It would have been obvious for one of ordinary skill in the art at the time of the invention to have selected a dopant having a smaller bandgap than the host for the luminescent layer of Yamada et al. and to have added the dopant in an amount up to 10 wt% of the luminous layer, because Hoag teaches in analogous art that dopants with such a bandgap property and used in such an amount are commonly known and used in the art and one would expect dopants selected and used in the same way for the Yamada et al. devices to be similarly useful.

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Allowable Subject Matter

13. Allowable subject matter has been previously discussed in the prior office actions based upon previously considered species; please see prior Office actions. No claims are directed solely to those allowable species, so no claims are currently indicated as allowed.

Response to Arguments

14. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached at (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dawn Garrett/
Primary Examiner, Art Unit 1794

June 4, 2009